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INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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S-E-C-R-E-T

25X1

COUNTRY Hungary

REPORT

SUBJECT Technical Equipment in the Hungarian
Air Defense System

DATE DISTR. 10 NOV 1957

NO. PAGES 7

REQUIREMENT
NO. RD

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25X1

DATE OF
INFO.

PLACE &
DATE ACQ

25X1

IVE APPRAISAL OF CONTENT IS TENTATIVE.

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STATE	#X	ARMY	#X	NAVY	#X	AIR	#X	FBI		AEC									
(Note: Washington distribution indicated by "X"; Field distribution by "#".)																			

INFORMATION REPORT INFORMATION REPORT

S-E-C-R-E-T**REPORT****COUNTRY** Hungary**DATE DISTR.** 1 Nov 1957**SUBJECT** Technical Equipment in the Hungarian
Air Defense System**NO. OF PAGES** 6**DATE OF INFORMATION****REFERENCES:**

25X1

PLACE ACQUIRED**THIS IS UNEVALUATED INFORMATION**

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**Technical Equipment in the Hungarian Air
Defense System**

Background

1.

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The completed study outlined an air defense system which would utilize the following types of equipment:

- a. EW Radar
- b. AA Radar
- c. Communications
- d. TV Data Link
- e. IFF
- f. ECM (Electronic Counter-measures)
- g. Guided Missiles²

These component equipments, with [] knowledge of Hungarian efforts, are described below.

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Early Warning Radar

2.

[] V-beam radars for early warning. []

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The initial Hungarian development effort was started in this area and consisted of building an X-band scale model. Surplus [] X-band components were made available and by 1952 full-scale S-band models were in production. In 1951 and 1952, Soviet publications and drawings concerning this equipment were made available. No Soviet components or hardware were furnished. Critical components, such as magnetrons and crystals, were reportedly smuggled in []

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AA Radar

3.

[] an AA radar [] Development and production of this type of equipment started in 1950 and 1952.

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Only a small number were produced; those constructed prior to 1952 were extremely unreliable and could be operated for only a few minutes at a time. Failures were caused by heating of small components, particularly the selsyns. The equipment was a Hungarian copy [redacted]

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Communications

4. The main communication technique proposed was a microwave system employing terminal and relay stations. [redacted] several communication equipments used or planned for use by the military.

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a. B-50 and R-30 - portable equipment operated from a few to 30 megacycles. Frequency stability was not good, because of low-quality components. Equipment was considered obsolete. Several hundred were produced and delivered to the Hungarian Army by 1956.

b. R-50 and R-51 - truck-mounted mobile one-kilowatt output equipment; it was otherwise similar to the R-30. [redacted] the R-51 was manufactured at the Beloiannis Telecommunications Factory (BHQ) in Budapest. From 10 to 20 sets were produced, in series, until 1955, but deliveries took place only in 1956. [redacted] the R-51 was primarily a transmitter, [redacted]

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[redacted] it was an amplitude-modulated equipment of one-kilowatt output. It was approximately 120 centimeters long, 60 centimeters wide and 180 centimeters high [redacted]

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it could be adopted as an airborne equipment. Either the R-50 or R-51 was tunable on the short-wave band from two megacycles to about 28 megacycles and/or the medium-wave band from 500 kilocycles to 1500 kilocycles. The only nomenclature known [redacted] was R-51. [redacted] four to eight R-51 sets. The equipment was used mostly by headquarters command groups. After 1955 it was believed to have been produced in probably three or four series.

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c. FM-10 - a military, light-weight walkie-talkie equipment operating in the 40 - 80-megacycle frequency range. This equipment was crystal-controlled and had six channels. It was first produced in 1955. About 40 to 50 sets were produced by 1956 in the first series production. The second series production, planned to start toward the end of 1956, was interrupted by the revolution. Initial production units were supplied to the Ministry of Agriculture for tractor stations.

d. Microwave Equipment³ - the following types of equipment were proposed.

(1) 108 - 118 megacycles, for ground-to-air use at airports.

(2) 200 megacycles, for postal broadcasting use. Equipment was to be built in three stages, with output of 250 watts, one kilowatt, and three kilowatts.

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25X1

(3) 400 megacycles, same as (2) above.

(4) 88 - 108 megacycles, same as (2) above.

In early 1957 the Soviets supplied a few lighthouse tubes for experimental use in Hungarian communication equipment. The largest type supplied was similar to the German LD-13.

[redacted] in the western sector of the country the Hungarians were using 48-channel carrier-frequency equipment made by the Philips Company in the Netherlands. In other sectors 12-channel equipment was used. There was some talk of buying some 60-channel equipment from Germany.

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[redacted] it would be three years before 60-channel microwave equipment would be produced in Hungary.

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TV Data Link

5. Included in [redacted] theoretical study was the suggestion for a TV data link. This would be used for remote displaying at the control center, of the PPI display of the EW radar. [redacted] a similar link for ground-to-air purposes. The ground PPI display would then be televised to the aircraft for use by the pilot. The pilot would select, by means of a channel switch, the PPI display showing the sector over which [redacted] was flying. The air situation in his immediate area was then shown by a line drawn to represent target tracks over a ground map, the tracks being plotted on a map overlay on the PPI scope. Area weather information was also to be displayed. A voice communication link would also be used for aircraft control.⁴

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IFF

6. [redacted]

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Electronic Counter Measures

7. [redacted] wide-band FM systems which would have high output powers and utilize directive antennas with possible tracking included. [redacted] in 1953 some tubes having an output of about one megawatt were available. In 1954 and 1955 he stated that a special study was made at the Telecommunications Research Institute in this area, quite probably as someone's thesis. At this time, he said high-powered klystrons were discussed but none were built.

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Miscellaneous Information

8. AI Radar - in 1950, a study was made of AI radars [redacted] [redacted]. The proposed radar design employed a conical scanning technique described [redacted] as the same employed in the AN/TPS-6 [redacted]. No such radar equipment was constructed, however.

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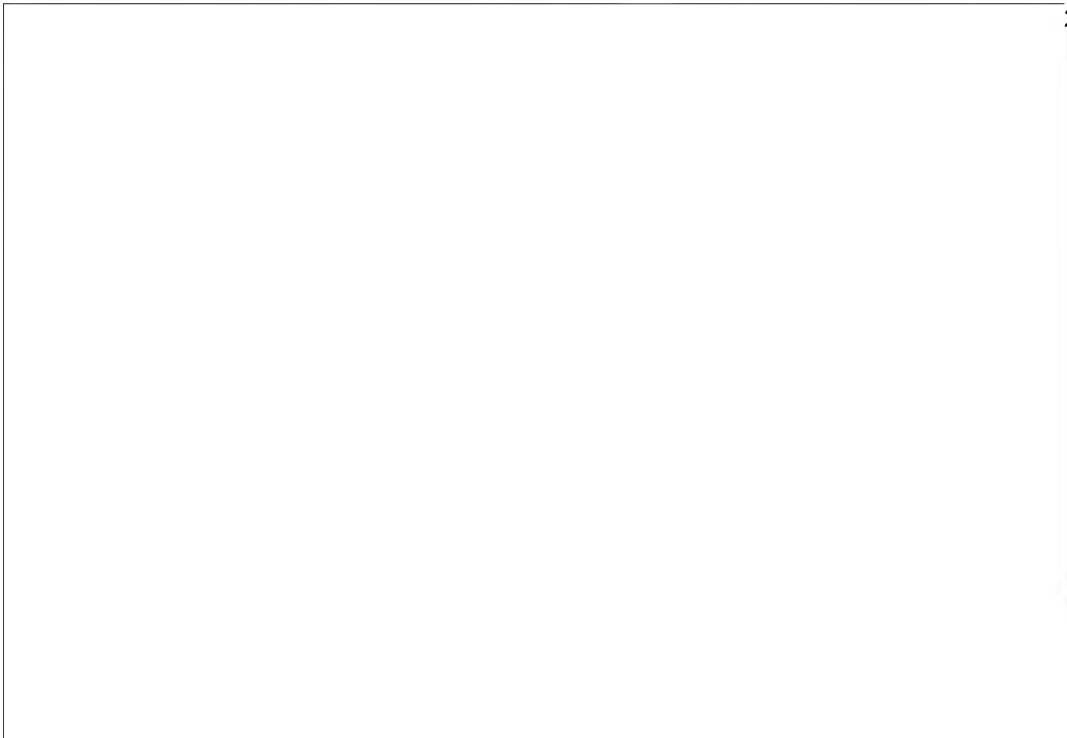
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9. **Infra-Red** - [redacted] an IR study was conducted at the research institute and that two ideas were proposed. One was an active IR system, the other a passive system. Preliminary research was done using cesium cells but no equipment was ever built. 25X1
10. **One-Centimeter Work** - in 1948 one-centimeter equipment was considered for communication application, later for airborne navigational radar. [redacted] some Western components were available, but no equipment was ever built. 25X1
11. **Magnetrons** - the Hungarians attempted to copy Western tube design; however, they were never very successful and rejects were high. [redacted] this was because of the lack of manpower assigned and the fact that at times one man was required to cope with several types of tube problems besides having to design necessary testing equipment. 25X1
12. **Electronic Materials** - a Soviet coordination meeting covering the development of special materials for electronic components was held in Berlin in February 1957. Hungarian representatives reported that no important tasks were assigned to Hungary, Poland, or East Germany. [redacted] this was due to the Soviet mistrust of the Satellites security-wise rather than because of their having no capabilities in this area. 25X1
13. **Radar Training Equipment** - in 1955 or 1956 the Soviets supplied training radars of the V-beam and [redacted] to an unidentified radar training school. 25X1

14.



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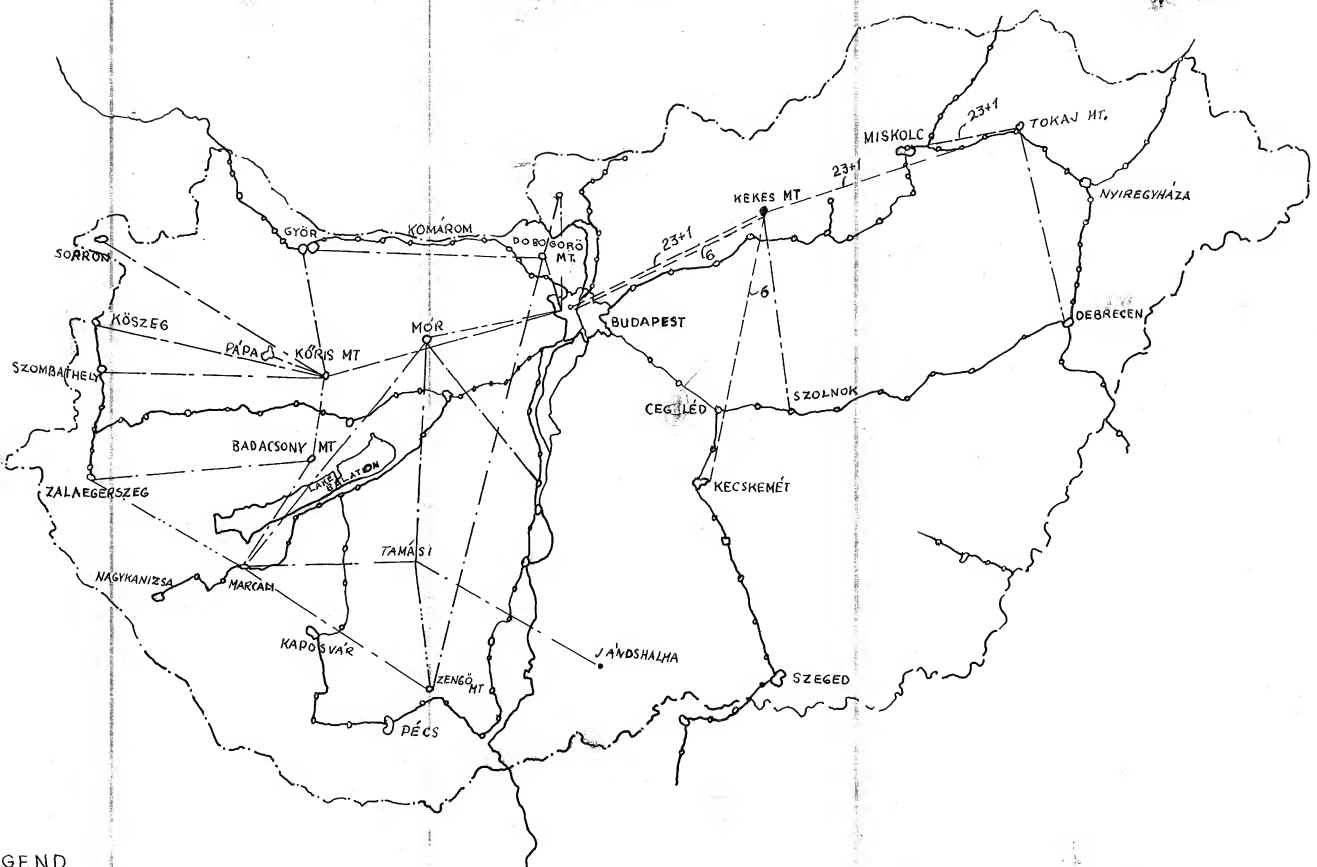
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INCLOSURE 1.

HUNGARY AIR DEFENSE'S MICRO-WAVE & TELEPHONE TRUNK LINES

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SECRET



LEGEND

- MAIN POST OFFICE COMMUNICATION LINES
- - - - - MICRO-WAVE LINKS ALREADY IN OPERATION
- MICRO-WAVE LINKS ALREADY FIELD TESTED, BUT NOT IN OPERATION
- · - · - PLANNED MICRO-WAVE LINKS

SECRET